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EXAMINER

BARBER, THERESE

ART UNIT PAPER NUMBER

2882

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/017,698

Applicant(s)

MILLER, ROBERT STEVEN

Examiner

Therese Barber

Art Unit

2882

AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 27-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 and 27-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 27-39 in Paper No. 4 is acknowledged. The traversal is on the ground(s) that the amended claims 1, 14 and 40 have been amended to be directed towards an integrated component mounting system for use in an x-ray tube. These modifications to the claim language have been found to be persuasive and claims 1-25 and 27-46 will be examined. The applicant has cancelled claim 26.

Drawings

2. The drawings filed on 7 December 2001 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 40, the limitation of "an x-ray tube component disposed on the

Art Unit: 2882

shaft” in each claim is indefinite. One of ordinary skilled art in the art could assume that ball bearings, rotor, stator, or an anode (which are all components of an x-ray tube) can be disposed on the shaft.

5. The term "substantially" in claims 2, 4, and 28 is a relative term, which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Regarding claims 2, 4 and 28, the term “substantially” is a broad term. MPEP 2173.05(b) states that the term "substantially" is often used in conjunction with another term to describe a particular characteristic of the claimed invention.

Specification

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

7. Claims 2-25, 29, 35, 36, and 41-46 are objected to because of the following informalities:

Regarding claims 2-13, 15-25, and 41-46, the phrase “for use in an x-ray tube” should be inserted after the word “system” in line 1 of each claim.

Regarding claim 14, line 5, delete the article “a” before the article “an”.

Art Unit: 2882

Regarding claims 29, 35, and 36, many words are misspelled due to the margin settings selected by the applicant.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5, 9-1 are rejected under 35 U.S.C. 102(b) as being anticipated by Holland (USPN 3,795,832).

10. Regarding claim 1, Holland discloses an integrated component mounting system for use in an x-ray tube (fig. 1) comprised a shaft (28) defining a longitudinal axis (col. 3, lines 12-15 and lines 20-31); and means for exerting and transmitting a radial force, wherein the means for exerting and transmitting the radial force controls radial movement of the target anode with respect to the longitudinal axis defined by the shaft (col. 4, lines 25-55).

Regarding claims 2 and 3, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the means for exerting and transmitting a radial force prevent radial movement of the target anode when the target anode is in a desired radial position (col. 4, lines 40-45) and wherein the means for exerting and transmitting a radial force at least partially controls axial movement of the target anode along the longitudinal axis defined by the shaft (col. 4, lines 40-45; col. 5, lines 21-33).

Art Unit: 2882

Regarding claims 4 and 5, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the shaft (28) comprises a support member 40; col. 4, lines 31-33) and means for exerting and transmitting a radial force cooperates with the support member to prevent axial movement of the component when the component is in a desired axial position (col. 4, lines 37-55) and the means for exerting and transmitting a radial force that moves the component to a desired radial position during assembly of the integrated component mounting system (col. 4, lines 37-55).

Regarding claims 6 and 8, Holland discloses an integrated component mounting system for use in an x-ray tube wherein when the component is in a desired position, the component is centered with respect to the longitudinal axis (fig. 1) and wherein the means for exerting and transmitting a radial force automatically centers the component with respect to the longitudinal axis during assembly of the integrated component mounting system (col. 4, lines 25-55 and col. 5, lines 59-65).

Regarding claims 9 and 10, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the means for exerting and transmitting a radial force secures the component to the shaft (col. 4, lines 37-55) and wherein the means for exerting and transmitting a radial force transmits an axial force and a radial force to the component and the transmission of the axial force and radial forces occurs simultaneously (col. 3, lines 12-19 and col. 4, lines 37-55).

Regarding claim 11, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the means for exerting and transmitting a radial force is comprised of a nut configured to engage the shaft (44; col. 4, lines 40-45 and lines 52-55); a first shaped surface

Art Unit: 2882

defined by the component (36; col. 4, lines 12-24) and a second shaped surface defined either by the shaft and by the nut and arranged for contact with the first shaped surface (38; col. 4, lines 25-45).

Regarding claim 12, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the means for exerting and transmitting a radial force comprises a nut (fig. 4; 44b) configured to engage the shaft (28b; col. 5, lines 39-42); an interface structure that is attached to the component (36b) and defines a first shaped surface (col. 5, lines 37-39); a second shaped surface defined by either the shaft or by the nut and arranged for contact with the first shaped surface (42 b or 38b; col. 5, lines 37-39).

Regarding claim 13, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the x-ray tube component comprises an x-ray target anode (12; col. 3, lines 12-31).

11. Regarding claim 14, Holland discloses an integrated component mounting system (fig. 4) for use in an x-ray tube (fig. 1) comprised of a shaft (28b) including a support (40b) and defining a longitudinal axis (col. 3, lines 12-15 and lines 20-31); a nut (44b) configured to engage the shaft (col. 5, lines 39-42); an x-ray tube target anode (26b) that defines a first shaped surface and is disposed on the shaft between the nut and the support member (fig. 4); and a second shaped surface defined either by the shaft or by the nut and arranged for contact with the first shaped surface (42 b or 38b; col. 5, lines 37-39).

Regarding claims 15-17, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the first shaped surface defines a first inclination angle and the

Art Unit: 2882

second shaped surface defines a second inclination angle (fig. 4); wherein the second shaped surface is defined by the shaft (42b or 38b; col. 5, lines 37-39); wherein second shaped is defined by the nut (42 b or 38b; fig. 4).

Regarding claims 18 and 19, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the first and second shaped surfaces each describe apportion of a circular curve (fig. 4) and wherein the first and second shaped surfaces each describe a parabolic curve (fig. 4).

Regarding claim 20, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the first shaped surface (26b) is convex and the second shaped surface (42b or 38b) is concave (fig. 4).

Regarding claim 22, Holland discloses an integrated component mounting system for use in an x-ray tube wherein the second shaped surface (42b or 38b) is defined by the nut (44b), and a third surface is defined by the x-ray tube target anode component and the third shaped surface is arranged for contact with a fourth shaped surface defined by the shaft (figs. 1, 3-5; col. 4, line 1 to col. 5, line 65).

Regarding claims 23-25, Holland discloses an integrated component mounting system for use in an x-ray tube wherein at least two of the first, second, third and fourth shaped surfaces describes a portion of a circular curve (figs. 1, 3-5; col. 4, line 1 to col. 5, line 65); wherein at least two of the first, second, third and fourth shaped surfaces describes a parabolic curve (figs. 1, 3-5; col. 4, line 1 to col. 5, line 65); and wherein the first, second, third and fourth shaped surfaces each define an inclination angle (figs. , 3-5; col. 4, line 1 to col. 5, line 65).

Art Unit: 2882

12. Regarding claim 27, Holland discloses an x-ray tube (fig. 1) comprised of a vacuum enclosure (10); a cathode disposed within the vacuum enclosure (22); and an integrated mounting component mounting system comprised of a shaft (16) defining a longitudinal axis (col. 3, lines 12-15 and lines 20-31); a target anode (12) disposed on the shaft and positioned within the vacuum enclosure so as to receive electrons emitted by the cathode (col. 3, lines 12-30); and means for exerting and transmitting a radial force, wherein the means for exerting and transmitting the radial force controls radial movement of the target anode with respect to the longitudinal axis defined by the shaft (col. 4, lines 25-55).

Regarding claims 28 and 29, Holland discloses an x-ray tube (fig. 1) wherein the means for exerting and transmitting a radial force prevent radial movement of the target anode when the target anode is in a desired radial position (col. 4, lines 25-55 and col. 5, lines 31-33) and wherein the means for exerting and transmitting a radial force at least partially controls axial movement of the target anode along the longitudinal axis defined by the shaft (col. 4, lines 25-55 and col. 5, lines 31-33).

Regarding claims 30 and 31, Holland discloses an x-ray tube (fig. 1) wherein the means for exerting and transmitting a radial force moves the target anode to a desired radial position during the assembly of the integrated component mounting system (col. 4, lines 25-55 and col. 5, lines 59-65) and wherein the means for exerting and transmitting a radial force automatically centers the target anode with respect to the longitudinal axis during the assembly of the integrated component mounting system (col. 4, lines 25-55 and col. 5, lines 59-65).

Regarding claims 32 and 33, Holland discloses an x-ray tube (fig. 1) wherein the means for exerting and transmitting a radial force transmits an axial force and a radial force to the target

Art Unit: 2882

anode, and the transmission of the axial force and the transmission of the radial force occurs simultaneously (col. 4, lines 25-55; col. 4, line 58 to col. 5, line 3; and col. 5, lines 59-65) and wherein the means for exerting and transmitting a radial force is comprised of a nut (44) configured to engage the shaft (28); a first shaped surface is defined by the target anode (col. 3, lines 12-25); and a second shaped surface is defined either by the shaft or by the nut and arranged for contact with the first shaped surface (38 or 42; col. 4, lines 20-45).

Regarding claims 34 and 35, Holland discloses an x-ray tube (fig. 1) wherein the first shaped surface defines a first inclination angle and the second shaped surface defines a second inclination angle (fig. 1) and wherein the second shaped surface is defined by the shaft (fig.1).

Regarding claims 36 and 37, Holland discloses an x-ray tube (fig. 1) wherein the second shaped surface is defined by the nut (col. 4, lines 41-45, lines 50-55) and wherein the second shaped surface is defined by the nut, and a third shaped surface is defined by the target anode and the third shaped surface is arranged for contact with a fourth shaped surface defined by the shaft (figs. 1 and 3-5; col. 4, line 1 to col. 5, line 65).

Regarding claims 38-39, Holland discloses an x-ray tube (fig. 1) wherein the first and second shaped surfaces each describe a portion of a circular curve (figs. 1 and 3-5) and wherein the first and second shaped surfaces each describe a parabolic curve (figs. 1 and 3-5).

13. Regarding claim 40, Holland discloses an integrated component mounting system (fig. 4) for use in an x-ray tube (fig. 1) comprised of a shaft (28b) including a support (40b) and defining a longitudinal axis (col. 3, lines 12-15 and lines 20-31); a nut (44b) configured to engage the shaft (col. 5, lines 39-42); an interface structure (42b) defining an opening and a first shaped

Art Unit: 2882

surface (26b); an x-ray tube component (26b) that defines an opening wherein the interface is received, and the x-ray tube component is disposed on the shaft between the nut and the support member so that the shaft is received with the opening defined by the interface structure (fig. 4); and a second surface shaped surface is defined either by the shaft or by the nut and arranged for contact with the first shaped surface (42b or 38b; col. 5, lines 37-39).

Regarding claims 41-43, Holland discloses an integrated component mounting system (fig. 4) for use in an use in an x-ray tube (fig. 1) wherein the second surface is defined by the shaft (fig. 4); wherein the second shaped surface is defined by the nut (fig. 4); wherein the first shaped surface defines a first inclination angle and the second shaped surface defines a second inclination angle (fig. 4).

Regarding claims 44-45, Holland discloses an integrated component mounting system (fig. 4) for use in an x-ray tube (fig. 1) wherein the first and second shaped surfaces each describe a portion of a circular curve (fig. 4) and wherein the first and second shaped surfaces each describe a parabolic curve (fig. 4).

Regarding claim 46, Holland discloses an integrated component mounting system (fig. 4) for use in an x-ray tube (fig. 1) wherein the component comprises a target anode (12; col. 3, lines 12-30; col. 5, lines 37-39).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 2882

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 7 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holland.
16. Regarding claim 7, Holland fails to disclose that the component is off-center with respect to the longitudinal when it is in a desired position.

Holland discloses the limitations of claims 1 and 5 wherein an integrated component mounting system for use in an x-ray tube (fig. 1) comprised a shaft (28) defining a longitudinal axis (col. 3, lines 12-15 and lines 20-31); means for exerting and transmitting a radial force, wherein the means for exerting and transmitting the radial force controls radial movement of the target anode with respect to the longitudinal axis defined by the shaft (col. 4, lines 25-55); and the means for exerting and transmitting a radial force that moves the component to a desired radial position during assembly of the integrated component mounting system (col. 4, lines 37-55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made the integrated component mounting system for use in an x-ray tube as disclosed by Holland is modified to have an off-center component with respect to its longitudinal axis because this modification is a design choice that can ensure that the off-centered component avoids stress concentration and controls movement by controlling the amount of slippage of the x-ray tube.

17. Regarding claim 21, Holland fails to disclose that the first shaped surface is concave and the second shaped surface is convex.

Holland discloses the limitations of claim 14 wherein an integrated component mounting system (fig. 4) for use in an x-ray tube (fig. 1) comprised of a shaft (28b) including a support (40b) and defining a longitudinal axis (col. 3, lines 12-15 and lines 20-31); a nut (44b) configured to engage the shaft (col. 5, lines 39-42); an x-ray tube target anode (26b) that defines a first shaped surface and is disposed on the shaft between the nut and the support member (fig. 4); and a second shaped surface defined either by the shaft or by the nut and arranged for contact with the first shaped surface (42 b or 38b; col. 5, lines 37-39).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the first and second shaped surfaces of integrated component mounting system for use in an x-ray tube as disclosed by Holland are modified to have either convex or concave surfaces because these modification are design choices that can ensure that the shaped surfaces avoid stress concentration.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Therese Barber whose telephone number is (703) 306-0205. The examiner can normally be reached on Monday to Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (703) 308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

tb *VB*
1 December 2003

David V. Bruce
DAVID V. BRUCE
PRIMARY EXAMINER